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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/726,438	12/02/2003	Osamu Kobayashi	GENSP015	6793
22434	7590	11/01/2005	EXAMINER	
BEYER WEAVER & THOMAS LLP P.O. BOX 70250 OAKLAND, CA 94612-0250			NGO, NGUYEN HOANG	
			ART UNIT	PAPER NUMBER
			2663	

DATE MAILED: 11/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/726,438

Applicant(s)

KOBAYASHI, OSAMU

Examiner

Nguyen Ngo

Art Unit

2663

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 August 2005.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☒ Claim(s) 30-33 is/are allowed.  
6) ☒ Claim(s) 1-5, 8-12 and 17-28 is/are rejected.  
7) ☒ Claim(s) 6, 7, 13-16, 29 and 34 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Response to Amendment***

1. This communication is in response to the amendment of 8/29/2005. Changes to the specification and claims have been entered. Accordingly, Claims 1-34 is currently pending in the application.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.  
[07-34-01]

3. Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claims 12 recites the limitation "in a range of approximately 1 Gigabits per second to approximately 2.5Gbps" in lines 1-3. The term approximately does not further limit the claims and the Examiner cannot distinguish to what approximately is.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2663

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 1-5, 8-11, 17, and 19-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolf et al. (US Patent 6,914,637) in view of Dells Technical Brief of Digital Visual Interface by Luke Chang and Joe Goodart, hereinafter referred to as Wolf and Chang.

**With regard to claims 1, 17, 19, and 24**, Wolf discloses a transmission efficient packet based display interface (fig 2) arranged to couple a multimedia source device (fig 2, left-hand largest rectangle) to a multimedia sink device (fig 2, right-hand largest rectangle), comprising a bi-directional auxiliary channel arranged to transfer information between the multimedia source device and the multimedia sink device and vice versa (col 6 lines 20-23), wherein the information transferred over the auxiliary channel includes a set of packet attributes (aux data is sent during data island, col 14 lines 8-9, and aux data island includes video packet display attributes HSYNC and VSYNC, col 19 lines 2-4); and a unidirectional main link arranged to carry a number multimedia data packets from

Art Unit: 2663

the multimedia source device to the multimedia sink device (video data during active video periods, col 12 line 66 – col 13 line 2) each having a multimedia data packet header (col 79 lines 47-48 and lines 51-52), wherein each of the headers is substantially reduced in size over what would otherwise be necessary since the packet attributes are communicated via the auxiliary channel prior to the transmission of the main link packets over main link thereby minimizing the packet overhead and providing a very high main link efficiency. (The video display attributes are necessary for appropriate video display and, if they were not transmitted out of band in the auxiliary channel, it would otherwise be necessary to include these attributes in a fixed position of the video packet itself, such as in a header. These attributes added to the video packet would increase the amount of data in the video packet, thereby increasing the bandwidth consumed by the packet. Hence the transmission of the attributes in the auxiliary channel significantly reduces the bandwidth that would otherwise be necessary for transmitting the multimedia data packet.). The EEPROMs and Microcontrollers shown in fig 2 store the computer program product that control the execution of the method performed by the apparatus described above.

Wolf however fails to specifically disclose the limitation of having the uni-directional main link and the bi-directional auxiliary channel to be separate from each other as argued by the applicant in the remarks filed 8/29/2005. Wolf however discloses that a DVI link comprises a TMDS link for transmitting video signals (multimedia data packets) as well as additional control lines (such as the DDC

Art Unit: 2663

correlating to an auxiliary channel, col2 lines 20-27)) thus providing the motivation to have a separate auxiliary channel to provide control data to the sink device to efficiently save bandwidth in the main link. It is well known in the art that the DDC channel may be considered as a separate channel from the TMDS link as shown in the Technical Brief by DELL (Digital Visual Interface by Luke Chang and Joe Goodart).

Chang discloses that a TMDS link is composed of three data channels for RGB information and has a maximum bandwidth of 165 MHz (unidirectional main link, pg2 left column, lines 1-10 and figure 1) correlating to CH0, CH1, and CH2 of figure 2 disclosed by Wolf. Chang further discloses that the digital DVI connector has 24 pins that can accommodate up to two TMDS links and the DDC (separate auxiliary channel, pg2 right column lines 21-26) which shows that a DDC channel may be considered as a separate channel from the TMDS link.

It should thus be obvious to a person skilled in the art to incorporate the teaching of having the DDC channel to be separate as disclosed by Chang into the method and system for video and auxiliary data transmission over a serial link as disclosed by Wolf to inefficiently save valuable bandwidth of the main TMDS link.

**With regard to claims 2, 20, and 25** Wolf discloses all aspects of the invention of claim 1 and further discloses that the packet based display interface further include a transmitter unit (fig 13 item 114) coupled to the source device arranged to receive a source packet data stream (packets, col 47 line 55, which pass through item 118 to item 114) in accordance with a native stream rate (MCLK of col 47 lines 39 and 53); and a

Art Unit: 2663

receiver unit coupled to the sink device (fig 14 item 214); and wherein the main link has an associated link transmission rate that is independent of the native stream rate (col 31 lines 39-44 describe primary data being transmitted at a rate higher than the audio data, which is received at the above noted native rate, and "higher" or "lower" do not constitute a dependency). The EEPROMs and Microcontrollers shown in fig 2 store the computer program product that control the execution of the method performed by the apparatus described above.

**With regard to claims 3, 21, and 26**, Wolf discloses all aspects of the invention of claims 1, 19, and 24 and further discloses that associated ones of multimedia data packets form a particular stream (col 6 lines 9-13, fig 2 depicts 2 different streams, in particular DigVideo). The EEPROMs and Microcontrollers shown in fig 2 store the computer program product that control the execution of the method performed by the apparatus described above.

**With regard to claims 4, 22, and 27**, Wolf discloses all aspects of the invention of claims 3, 21, and 26, and further discloses that the multimedia data packet stream is one of a number of multimedia data packet streams (col 11 lines 47-58) each having an associated adjustable data stream link rate that is independent of the native stream rate (col 11 lines 58-67, states all streams of data can have same time base, or when there is a need some of the audio or other data can be based upon another time base, hence adjusting from the former configuration to the latter. The EEPROMs and

Art Unit: 2663

Microcontrollers shown in fig 2 store the computer program product that control the execution of the method performed by the apparatus described above.

**With regard to claims 5, 23, and 28,** Wolf discloses all aspects of the invention of claims 1, 19, and 24 and further discloses that the bidirectional auxiliary channel is formed of a uni-directional back channel configured to carry information from the sink device to the source device (col 12 lines 46-53 describe an industry standard method of a sink device communicating configuration information one way to a source device) and a uni directional forward channel included (auxiliary channel as set forth in the rejection of claim 1) as part of the main channel (fig 2 CH0, CH1, CH2, and CH3 comprise the main channel) for carrying information from the source device to the sink device in concert with the back channel (fig 2 shows the DDC and main channel coexisting in concert). The EEPROMs and Microcontrollers shown in fig 2 store the computer program product that control the execution of the method performed by the apparatus described above.

**With regard to claim 8,** Wolf discloses all aspects of the invention of claim 1 and further discloses the inclusion of a hot plug event detector (col 2 lines 36-39).

**With regard to claim 9,** Wolf discloses all aspects of the invention of claim 1 and further discloses that the information includes display timing information used by the sink device to provide a displayed image based upon the received data stream (col 14



Art Unit: 2663

lines 9-10 describe a video preamble, which denotes the timing of the beginning of an active video period, which is used by the sink device to understand that an active video period is beginning, so that the sink device understands that the next data is video data used to display images).

**With regard to claim 10**, Wolf discloses all aspects of the invention of claim 1 and further discloses that the information includes sync loss (glitches, col 77 lines 47-50) information, dropped packets information (if packets are received then the receiver has evidence information that they have not been dropped), and the results of training session information (the reference of the rejection of claim 14 regarding the back channel includes configuration information relevant to the transmitter training the transmitter to be able to understand what type of display with which it will communicate, and the results of that session are the successful display of video or graphics or playback of audio).

**With regard to claim 11**, Wolf discloses all aspects of the invention of claim 1 and further discloses that the multimedia data packet transfer is an isochronous type transfer that includes a video data stream and a multichannel audio stream (see col 11 lines 47-58 reference, paying particular attention to use of same time base) and wherein the information transfer is an asynchronous transfer (col 14 lines 34-39, asynchronous arrangement of active video periods and data islands).

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6,914,637 to Wolf et al.

**With regard to claim 12**, Wolf discloses all aspects of the invention of claim 1 but fails to explicitly disclose that the main link rate is adjustable in the range of approximately 1.0 Gigabits per second to approximately 2.5 Gbps. However, it would have been obvious to one ordinarily skilled in the art at the time of the invention to include this functionality to arrive at the invention of claim 12. The motivation to do so would have been to accommodate different cable lengths and materials so as to avoid signal dispersion and attenuation of longer cables or poorer (less expensive) conductors.

11. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6,914,637 to Wolf et al. in view of US-PGPUB 2003/0212811 submitted by Thornton.

**With regard to claim 18**, Wolf discloses all aspects of the invention of claim 1 but fails to *explicitly* disclose the selective refresh unit and associated functionality of claim 18. However Thornton discloses a selective refresh unit (fig 3 item 306A) that performs the selective refresh of claim 18, wherein the coordinates are the mouse positions (paragraphs 127-129). It would have been obvious to one ordinarily skilled in the art at the time of the invention to include this device and functionality into the device of claim 1 to arrive at the invention of claim 18. The motivation to do so would have been to utilize the selective updating method to limit the bandwidth used between the selective refresh unit and the display (paragraph 122 says that frames are updated independent of how they are written to the frame grabber, and not rewriting data that does not need to be rewritten because it hasn't changed can conserve valuable bandwidth).

***Allowable Subject Matter***

12. Claims 6-7, 13-16, 29, and 34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. Claims 30-33 are allowed

14. These claims are allowable due to the further limitations of having the main link include a number of virtual links each being associated with a particular one of the multimedia data packet streams wherein each of said virtual links has an associated virtual link bandwidth and a virtual link rate and the limitation of having the receiver unit include a time-base recovery unit arranged to regenerate a particular data stream's native rate based upon a time stamp embedded within the data packets and wherein the time stamp is based upon a determination of a number of native stream clocks in  $2^{20}$  cycles of link cycle clock frequency period.

#### ***Response to Arguments***

15. Applicant's arguments filed 8/24/2005 have been fully considered but they are not persuasive.

16. The applicant submits that Wolf does not teach of a uni-directional main link and a bi-directional auxiliary channel that are separate from each other. Examiner posits that it is not unreasonable to interpret the DDC as a separate auxiliary channel from the combination of CH0, CH1, CH2, and CHC, which the Examiner interprets to constitute as the TMDS "main" link. It is understood that Wolf describes the DDC channel as being apart of the TMDS link, but it would be obvious to a person skilled in the art, as stated with the discussion of claim 1, to separate the DDC channel from the TMDS main link in order to save valuable bandwidth for the TMDS main link (CH0, CH1, Ch2, and CHC). The Examiner interprets the CH0, CH1, CH2, and CH2 to correlate to the

Art Unit: 2663

unidirectional main link (col2 lines 15-20 and figure 1) and the DDC channel to correlate to the bi-directional auxiliary channel (col2 lines 31-33 and figure 2). Wolf further discloses that a DVI link comprises a TMDS link for transmitting video signals as well as additional control lines (such as the DDC). It is noted that it is real known in the art that a DVI link comprises a TMDS link comprising three data channels for RGB information that are unidirectional in nature and a separate bi-directional DDC channel for transmission of control data (a uni-directional main link (RGB channels constituting a TMDS link) and a bi-directional auxiliary channel (DDC channel) that are separate from each other) as disclosed by Chang as mentioned in claim 1.

### ***Conclusion***

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 2663

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a) Luke Chang and Joe Goodart, Technology Brief: Digital Visual Interface May 2000, DELL , pages 1-4.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nguyen Ngo whose telephone number is (571)272-8398. The examiner can normally be reached on Monday-Friday 7am - 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571)272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/726,438

Page 14

Art Unit: 2663

\*\*\* *W.N.*

**Nguyen Ngo**

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